NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D. C. 20546

FOR RELEASE:
UPON DELIVERY

Dr. Newell
Read this
as Fletcher
(Was in D.C. having
a press conf.
on joint US/USSR
Spaceflight.

Remarks by

Dr. James C. Fletcher

Administrator

National Aeronautics and Space Administration

to

Aviation/Space Writers Panel

New York City

May 24, 1972

I think we might start this discussion of where America is going in space by looking at what has happened on the Moon during the past year. I think we might call this happening the metamorphosis of Apollo.

With the landing of Apollo 15 on the Moon last summer, emphasis in the Apollo program clearly changed from engineering to science.

This change has been brilliantly re-affirmed by the achievements of Apollo 16.

We have moved far beyond the original goal of demonstrating American technological strength and American ability to mobilize great skills and resources in response to challenge.

We have begun in earnest to use our space technology to help science solve one of the great remaining mysteries of our time -- the origin and early history of the solar system.

Apollo 16 gave us an excellent example of how well engineers and scientists can work together to get the most out of lunar exploration. We saw in real time how engineering teams reacted quickly to find a way to complete a mission that was threatened by a malfunction of one of the many systems in the Apollo spacecraft. We saw the astronauts on the Moon assisted by scientists and engineers on Earth working together to get the most possible scientific information to add to our knowledge of the Moon, its origin and its evolution.

- more -

It is too early to evaluate all of the scientific achievements of the Apollo 16 mission. However, our first quick look at the results indicates that Apollo 16 will replace Apollo 15 as the most fruitful manned space voyage yet.

When the samples, film, and other data have been fully studied and analyzed, the early history and evolution of the Moon will be much more closely bounded than has been possible up to this time.

Successful completion of the Apollo 16 mission was especially important for science, since this is the only Apollo landing to be made in the lunar highlands. Thus the information gained from this site will be extrapolated to a major portion of the lunar surface.

Of course, some people ask whether the money spent on Apollo -- about $23 billions over a decade -- might not have been better spent for other national goals than that of landing men on the surface of this dead and hostile body. It should be noted that the cost to each American annually has been less than 1 1/2 cents of the tax dollar, except for two years in the middle of the last decade when it was less than 2 1/2 cents of the tax dollar.

There is not time this morning to examine all the reasons why Apollo has been a good investment for this country; I am sure you have made up your mind about that. But I think I can sum it up this way: We accomplished what we set out to do -- and much more besides. The benefits will continue to come in for many years; conversely, we will never know what the cost to this country might have been if we had ignored this challenge. That is something I urge the critics to ponder -- especially those cynics Oscar Wilde once described as "people who know the price of everything, but the value of nothing."

It is important, as we plan future programs, to remember that the great wealth of scientific information returned by the recent Apollo missions was not anticipated at the start of the program. The argument then was whether the political demonstration was worth the cost. The scientific returns have been an unexpected and most welcome bonus. Above all, they point up how much more there is to be learned and discovered in space.

Some thoughtful observers have also suggested that the most valuable pay-off from Apollo will be better knowledge of how to plan, coordinate, and monitor the multitudinous and varied activities of the organizations required to accomplish great national undertakings.

How and when will this kind of pay-off manifest itself in American life? I don't know. I don't want to suggest that replicas of the Apollo team will pop up all over the country like some quick-food franchise. I do believe that the Apollo approach to the management of complex undertakings has already become part of the American way of doing things. When it will re-appear in tangible form in some great new social or scientific undertaking remains to be seen. But we do know, of course, that the Apollo approach has been applied with great success to the problem of defining and designing the Space Shuttle, and to planning America's future in space.

But our gains from Apollo have also been more immediate and more discernible. Let me give you a few examples:

From our seismic experiments set on the lunar surface by the Apollo astronauts, information has been provided about the internal lunar structure that has given our geologists better understanding of Earth's structure and evolution. Laser reflectors left on the Moon have enabled more accurate measurements of the "wobble" of Earth on its axis. This "wobble," experts believe, is responsible for the stresses in Earth's crust resulting in earthquakes. Analysis of the stresses from data provided by our manned landings on the Moon and the instrumentation placed there by our Moon-walkers may enable experts to forecast quakes on Earth.

From the rocks and dust brought back from the Moon, scientists are learning more about the Sun's activity through time by analysis of the energies of the solar wind contained in the rocks and dust. Such knowledge sheds clues on the causes of past climatic changes on Earth that resulted in the Ice Ages or that caused extended periods of tropical climate. Looking ahead to future generations, such knowledge may be vital to maintaining Earth's viability.

Lunar rocks, particularly from Apollo 12, have high concentrations of valuable chemicals such as uranium, thorium, and potassium. And NASA scientists have discovered a way to make water and oxygen from the lunar soil which holds possible promise for future utilization. The feasibility of this process has been demonstrated in the laboratory. Additional work is necessary, however, before we can be sure of its feasibility as a large-scale undertaking -- at some future time -- on the Moon.

But the Apollo achievement has even greater significance, I believe, in the hope that it provides us all if we will but learn the lesson it offers. Our first manned lunar landing was, in a sense, the realization of "the impossible dream." Down through recorded history, reaching for the Moon was the symbol of the unattainable, unachievable, "the impossible dream." But when our Apollo 11 astronauts stepped down on the surface of the Moon, man on Earth was forced to reasses his potential for achievement. After all, if man could walk on the Moon, could any dream be impossible of achievement -- including the dream of universal peace, of brotherhood. The proposed IRDB President Nixon is discussing with Soviet leaders in Moscow at this moment may be another small but significant step in this direction.

In any evaluation of the Apollo program, I think we have to keep in mind what Life magazine said in December 1969, in an article on the decade of the Sixties and all that went wrong in American society during that troubled and often tragic period. Then, as Life put it, "the decade ended with an adventure so fantastic as almost to overshadow and redeem all the turmoil that had scarred it." That redeeming adventure was Apollo 11. It was the one great event of the decade that gave the American people renewed faith in their destiny.

Think for a moment, if you will, on what the decade of the Sixties might have been like if America had sat on the sidelines of space and let our competitors for world leadership dominate man's use of this new realm.

The landing on the Moon was not only a triumph of skilled management; it was brought about by an unusual unity of will and commitment. What Apollo tells us is that there is, indeed, a way to the heights, despite great obstacles, provided there is the will and the commitment.

But the commitment to Apollo was given 11 years ago tomorrow. It is time, if this country is to continue to seek its destiny in space, for a new commitment to new goals.

For some years now our program has been coasting, you might say, on the momentum built up in the decade of the Sixties. Well, this period of uncertainty is about ended. We are now moving ahead into a new and highly creative phase of the nation's space effort for the Seventies.

The House and Senate have already given strong bi-partisan support to the NASA authorization bill, including the decision to proceed with Shuttle development. An amendment to strike out all funds for the Shuttle was defeated in the Senate by the resounding bi-partisan vote of 61 to 21. In the House, an anti-Shuttle amendment got only 11 votes.

I believe the programs we have worked out for this next decade will be just as exciting as the effort that took us to the Moon, and much more rewarding. They will be much more rewarding, despite a smaller investment, because we will be building on the tremendous new capabilities created in the Apollo program; because we are emphasizing the quest for practical benefits in space near Earth; and because we now have it in our power to greatly expand our knowledge of the solar system and the universe beyond, and to put this new knowledge to practical use. In this sense, Apollo is not the end of something; it is the beginning of a bright new era of exploration.

How do I justify such optimism about the American future in space?

The answer is that since January 1 we have made a number of decisions just as important as the urgent decision in 1958 to establish NASA or the bold decision taken in 1961 to move rapidly toward a landing on the Moon.

I know you are already familiar with each of these recent decisions. But I wonder if you have stopped to consider their total significance as a "package," as a series of inter-related actions.

On January 5 the President announced his decision to support the Space Shuttle as the key space program for this decade.

On January 24 the President sent to Congress a budget that provides funds for the Space Shuttle and for steady progress in all the principal areas of space activity -- space science, planetary exploration, practical applications, and advanced research. And it is most important to note that this is a stabilized budget: we can develop the Shuttle and carry out our present plans for a well balanced program without significant increases in our budget during this decade.

On March 15 I was able to announce NASA's final decision on all major questions of Shuttle design, and two days later we asked for proposals from the aerospace industry.

Four companies submitted proposals: Grumman, Lockheed, North American Rockwell, and McDonnell-Douglas. NASA will select one of these companies as prime contractor sometime this summer.

With this series of actions, plus the favorable vote in Congress on the NASA authorization bill, we have come a long way in 1972.

Since 1965 this country has been trying to decide on what next to do in space. In recent months we have made the hard decisions and, I am delighted to say, we are now very close to having a new national mandate for the Space Program of the Seventies. The one decision still needed is favorable action in Congress on the NASA appropriation bill.

We were able to make this breakthrough in space program planning in 1972 by our progress in re-defining the Space Shuttle to hold down the costs of development without significant effect on its performance and versatility.

I am sure the Space Shuttle will go down in history as one of the most useful inventions of this century.

The invention of a new kind of ocean-going ship, the caravelle, led to the great voyages of discovery in the 15th and 16th centuries. We are not yet ready to build the space age equivalent of the caravelle. We are not yet ready to build the space ships that will take men and women on the long voyages to the planets.

With the Shuttle, however, we will be able to operate freely in what might be called the home seas of space. I don't want to carry this analogy too far. But I do want to stress the importance of being able to operate effectively in this new sea where more and more manned and unmanned ships will sail to serve the science, the security, the commerce, and the culture of the modern world.

The key to our ability to open up this new sea and operate effectively there is the Space Shuttle.

The decision to proceed with the Shuttle has profound implications for the future of this nation.

Fortunately, a substantial bi-partisan majority in Congress is well aware of the fact that this country needs the Shuttle and that failure to act favorably on it now would be nothing less than a national disaster.

The Shuttle story, of course, is not just engineering. All through the development years ahead we must give thought to the scientific and practical uses to be made of this engineering marvel we are building.

Shuttle development is fully justified by the uses we have already identified, but I am sure that important new uses will be conceived -- if we turn our minds to it -- as we build and test the Shuttle.

Now that we have witnessed the great scientific achievements of Apollo, which were not clearly visualized even a few years ago, It will be easier to keep in mind that innovation and excellence in space engineering are not ends in themselves but the means to new ends of great scientific and practical value.

That is the real significance of the great technological progress we have made in the first 15 years of the Space Age. We have developed extensive new technologies to serve science and produce practical benefits. Apollo was the first stage in this technological progress. The second stage will stress the practical use of spacecraft in earth orbit. Our first Earth Resources Technology Satellite is scheduled for launch next month. I believe you are already aware of the vast potential of spacecraft in Earth orbit for many uses on a global scale; and I believe it is fairly obvious that we can produce the new technology for practical benefits from space as fast as our colleagues in government and business can work out the institutions and arrangements for putting it to use.

I believe that our new space program for the Seventies is highly relevant to the needs of the American economy and American society today. I believe that for these main reasons:

-- There are the practical uses of space, which are growing, and which will pay their own way.

-- There are the defense uses of space, which are vital. We can neglect them only at great peril.

-- There are the scientific uses of space which stimulate our thinking and are sure to yield practical benefits of great value in the long run. Study of the Sun led to the harnessing of atomic energy. Further study of the Sun and stars will lead to similar or greater benefits. I believe we are on the threshold of great new insights into the origin and nature of the universe, but progress depends on continued use of space to solve the puzzles.

-- There are the international uses of space, to help bind the peoples of the world closer together and generate more common effort to solve common problems. Navigation on the Mediterranean played a most important role in the development and spread and survival of Western civilization. I believe navigation in the Supraterranean Sea of near space will help perfect and save world civilization.

-- There are the catalytic effects of space, which force the development of new technology, new products, and new industries.

-- There are the inspirational values of space. It is now widely accepted that our major achievement as a nation in the last decade -- and perhaps in this century -- was the landing on the Moon. When we have self-doubts about where we are going and what is happening to our society, our pioneering successes in space can help us to keep our perspective and can remind us of our creativity and power when we decide to focus our talents and energies.

The central fact of American history, that we tamed a continent and wrought a new civilization in the wilderness, is becoming more remote. We cannot be nurtured indefinitely by the stirring deeds of our ancestors. Fortunately, we do have the new frontiers of space. Our exploits there have already been used to spur us on to solve the more mundane problems we have at home. I see space activity, not as a diversion from problems at home, but as a preparation, a gathering of moral and technological strength and courage, for building a better society on Earth.

- end -